Section of Orthopædics

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Hip Arthroplasties and Their Exact Technique [*Abstract*]

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DR. HERBERT had studied the tissue-reactions about vitallium cups and acrylic prostheses used in arthroplasty (1952). He stressed their function of transmitting power and weight as well as allowing movement. A secondary operation after cup arthroplasty revealed a lining of smooth fibrous tissue over healthy bone. Necropsy three years after insertion of an acrylic head revealed similar changes at the upper lip of the femoral stump; but the lower lip presented bone sclerosis and some cartilaginous metaplasia in its covering, the responses to pressure. No foreign body reaction was evident. A prosthesis should distribute weight widely and equally, and its insertion should be planned from tracings of full-face radiographs of the femoral neck. In drilling for a Judet prosthesis a special apparatus would compensate for the deviation of the axis of the neck from the centre of the head. Contrary to British opinion, Dr. Herbert favoured the vitallium cup in ankylosing spondylitis, and for this alone. Prostheses did not arrest degeneration: they only changed its site.

REFERENCE

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Recurrent Instability of the Ankle—a Method of Surgical Treatment

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FIFTEEN women and four men with recurrent instability of the ankle treated by transposition of the peroneus brevis tendon form the subject of this short paper. The average age of these 19 patients was 34.

Each gave a history of an original acute sprain. After this, at intervals varying from weeks to years, the ankle gave way and "went over" inwards. The cause was usually trivial, and often unknown. The ankle was temporarily painful and swollen. Resolution, however, occurred quickly. The only constant clinical finding was increased passive inversion. X-ray in forced inversion—without anæsthesia, because there was little or no pain—usually revealed tilting of the talus within the ankle mortice. This is quite a different picture from the acute sprain, a dramatic occurrence, with marked signs and prolonged pain and incapacity.

Clinically and radiologically there were two distinct groups. The first comprised 14 patients—10 women and 4 men. These showed increased passive inversion of the affected foot and corresponding unilateral tilting of the talus. The second comprised 5 patients—all women. These showed increased passive inversion of both feet, and bilateral tilting of the talus, either to the same or a varying degree.

At operation, in most patients the capsule of the ankle-joint and the calcaneofibular fasciculus of the lateral ligament were found ruptured. In some, the capsule and ligament were intact but sufficiently relaxed to permit tilting of the talus.

Many operations of varying complexity have been used in treating this condition. These include tenodesis (Nilsonne, 1931), ligament reconstruction (Elmslie, 1934), and combined tenodesis and ligament reconstruction (Watson-Jones, 1940). The use of the peroneus brevis tendon is common to most of these operations. A simple operation—transposition of the peroneus brevis tendon—is now described.

Through a 4-in. (10 cm.) straight or J-shaped incision behind the fibula, the peroneal tendons are identified. The tendon of the peroneus brevis is divided at the upper limit of the incision. The distal end is stripped of its lowermost muscle fibres, and dissected free to the back of the lateral malleolus.

FIG. 1.—Showing the course of the transposed peroneus brevis tendon.

Here it is withdrawn through the superior peroneal retinaculum to below and in front of the lateral malleolus. A 3/16 in. (0·5 cm.) drill hole is made diagonally forwards and downwards through the lower end of the fibula. The tendon is threaded back through this drill hole, and with the foot held in slight eversion, is reattached to the proximal end with any necessary overlap (Fig. 1). Threading is facilitated if the lower opening is enlarged with a small gouge or burr. The wound is closed, and a below-knee plaster applied with the foot at right-angles and in the mid-position. This plaster is changed after three weeks and a walking plaster substituted. This is removed after a further three weeks, when normal walking is started.

Of the 19 patients, 14 were reviewed after three and a half years to eight months.

All patients had limitation of inversion of the foot, and there was usually no other abnormality. Swelling did not occur after the first six months. In some, the transposed tendon could be seen and felt acting above and below the fibular tunnel. In others a tenodesis had resulted. The time off normal activities averaged two months, though some patients resumed sedentary occupations earlier in plaster.

Twelve results were good, with no recurrence of instability or other symptoms. One was fair, after a post-operative deep vein thrombosis—the only complication encountered ; except for some residual swelling of the leg, the functional result was satisfactory. One was poor; the patient had some pain and swelling and marked restriction of inversion of the foot, but nevertheless she regarded the operation as worth while.

Of the many operations described, simple transposition of the peroneus brevis tendon would appear, on a short follow-up, to warrant further trial.

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The Use of Radioactive Phosphorus in Early Detection of Avascular Necrosis in the Femoral Head in Fractured Neck of Femur

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THIS is a preliminary report with a follow-up which is too short for any final assessment. It is, however, already obvious that a larger investigation should be carried out.

Avascular necrosis in the femoral head occurs in about 30% to 40% of cases of fractured neck of the femur treated by nailing, and is commonly ascribed to vascular damage at the time of injury.

The introduction of radioactive isotopes has given us a new method of investigating the blood supply of human tissues. Radioactive phosphorus (P^{32}) is the most suitable isotope for this work. It emits β rays. These are easily detected but their range is limited, 0·1 mm. of tissue absorbing 90%. The half-life of P^{32} is 14·3 days, and the bulk of the isotope is excreted from the body in the urine and fæces fairly rapidly, the blood ceasing to be radioactive a few days after injection of P^{32}; the skeleton, however, continues to be appreciably radioactive for a few weeks.

Technique.—This isotope is given in doses of 1 to 2 c.c. intravenously as a sterile isotonic buffered phosphate solution containing approximately 200 mc. of P^{32} one hour before the nailing operation. The usual nailing technique is carried out, and two samples of bone are removed, one from the trochanteric region as a normal control (Fig. 1) and the other from the head of the femur (Fig. 2). These samples (100–150 mg.) are removed with a Harris's bone biopsy drill under X-ray control. They are dried and weighed, and their radioactive content is measured on a Geiger counter. The result is expressed as $\frac{\text{counts/mg./min. in trochanter.}}{\text{counts/mg./min. in head}}$